

Coping with the threat of terrorism: A review

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Abstract

Terrorism creates a ripple of fear and uncertainty. Although most individuals are resilient and recover over time, a minority remains functionally and psychologically impaired. In this paper, we examine research on coping strategies employed in the aftermath of terrorist events, theories and empirical findings related to appraisal processes that influence individuals' primary attributions of risk, and normative processes that shape secondary appraisals, which predict specific coping behaviors. We also describe individual diatheses and factors promoting resilience that may influence coping and functioning in the face of terrorism. Finally, we offer suggestions for future research.

Keywords: *Terrorism, coping, mental health*

Although the first episode of international terrorism on the US mainland happened in 1993 (the World Trade Center bombing – 26 February 1993), the events of 11 September 2001 (9/11) brought terrorism home to all Americans. After the attacks on the World Trade Center, the Pentagon, and United Airlines Flight 93, Americans can no longer view terrorist attacks as isolated, far-away, or necessarily rare events. The abrupt and grotesque shattering of expectations of invulnerability, stemming from the events of 9/11, led to spikes in anxiety and depression as well as symptoms of post-traumatic stress disorder (PTSD; e.g., Galea et al., 2002; Schuster et al., 2001). During the second month after the attacks, about 12% of the US population experienced significant distress, with 30% of individuals nationally reporting symptoms of anxiety, and 27% reporting avoiding situations that reminded them of 9/11 (Silver, Holman, McIntosh, Poulin, & Gil-Rivas, 2002). As would be expected, overall distress levels, although elevated in New York City, quickly returned to normal levels for the rest of the nation (Schlenger, 2004 for a review; see also Adams & Boscarino, 2005; Knudsen, Roman, Johnson, & Ducharme, 2005). These assessments, however, are made through the lens of the psychiatric disease model. The question that remains is: what is the impact of terrorism in the US on the behaviors, attitudes, and beliefs that underlie functional capacities, well-being, and quality of life?

Given that the majority of Americans did not develop a formal psychiatric condition as a result of 9/11, it is important to distinguish between psychopathology and responses that are normative following extraordinarily upsetting events (e.g., Litz, Gray, Bryant, & Adler, 2002; North & Pfefferbaum, 2002). PTSD, "subsyndromal PTSD," or other mental health

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problems implicated by direct or indirect exposure to terrorism events are just one of many factors that affect how people function over time in the face of the threat of future terrorism. An exclusive focus on mental health outcomes fails to recognize how terrorism impacts individuals' daily choices, behaviors, and habits. For example, although individuals may not have PTSD or depression, they may ride the bus or fly less frequently and/or reduce social interactions with other people in public places that they appraise as dangerous. As a result, these individuals may feel socially isolated, rate their personal coping resources as low, and be more vulnerable to mental health difficulties in response to ongoing or future terrorist threats or attacks.

The Institute of Medicine, in their report on preparing for the psychological consequences of terrorism, concluded that the literature specific to the psychological sequelae of terrorist attacks is extremely limited (Butler, Panzer, Goldfrank, and Institute of Medicine of the National Academies, 2003). The committee remarked that although there is good cross-sectional evidence about the prevalence of PTSD and other mental health problems in those exposed directly to terrorism, there is little knowledge about the trajectory of coping with the lingering threat of terror and the manner in which terror affects functioning including: school dropout rates, work or school absenteeism, divorce, interpersonal violence, and group conflict. In this paper, we discuss factors that arguably shape changes in individuals' normative behaviors and functioning in response to the threat of terrorism. This includes ways in which individuals' lives have been impacted (e.g., decreased social and occupational functioning or avoidance of specific aspects of social and occupational functioning perceived to put the individual at high risk), and ways in which individuals demonstrate functional resiliency despite fears of future harm. In this context, functional impact, as opposed to psychopathology, is the critical outcome because the threat of future terrorism is not a traumatic event, and reliance on symptom-based outcomes fails to relate the whole story about how people respond behaviorally and cognitively.

There has been little research on the functional impact of the threat of terror. Given this vacuum, we review the literature on adaptation to stress and trauma, and extrapolate and posit factors that likely influence functional capacities in the face of the threat of future terror. We examine research on reactions to actual traumatic events for clues about how people may manage their lives in the face of lingering terror. As coping with the threat of potential terrorism is a dynamic process, highly influenced by flare-ups of acute concern or fear tied to events out of anyone's control, we also examine the cognitive factors that likely influence appraisal of personal risk of harm, and how these interact with diatheses and resiliency factors. Our analysis is consistent with the coping theory of Folkman and Lazarus (1991), which hypothesizes that coping strategies are dependant on primary appraisals of risk and secondary appraisals of resources and abilities to cope with that risk (Folkman & Lazarus, 1991).

Thus, in this paper, we examine: (1) research on coping strategies employed in the aftermath of terrorist events; (2) theories and empirical findings related to appraisal processes that influence individuals' primary attributions of risk; (3) normative processes that shape secondary appraisals (including terror management, just world schema, and meaning making), which predict specific coping behaviors; and (4) individual diatheses and factors promoting resilience that may influence coping and functioning in the face of terror.

Review of coping and terrorism

Terrorism is a form of "psychological warfare," in which individuals or groups (whether by intimidation, torture, and/or mass attacks) seek to "invoke pervasive fear in a civilian population by personalizing the threat so that everyone feels vulnerable" (Tucker, 2003, p. 9), with the goal of influencing or controlling individuals' day-to-day functioning and broadly impacting the target community. According to the *Code of Federal Regulations*, a key goal of terrorism is to "... intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives" (28 C.F.R. Section 0.85). Terrorism events can be experienced directly or indirectly (e.g., via the media; Pfefferbaum et al., 2003; Schuster et al., 2001). Terrorism is effective at the societal level because of lingering anxiety and periodic acute fear, which arguably serve to inflate probability estimates of the threat of personal exposure to a future terrorist act. Fear can lead to maladaptive or unnecessary coping strategies and avoidant behaviors (e.g., avoidance of certain modes of transportation, leaving the house less frequently). These behavioral changes may significantly alter various cultural and societal functions (e.g., the economy), and reinforce feelings of fear, helplessness, and insecurity among citizens.

Lazarus and Folkman (1984) posit that a coping response is required when a change in one's environment or internal milieu is appraised as likely to have harmful effects on one's well-being (primary appraisal). This leads to a tacit or explicit assessment of one's resources and abilities (secondary appraisal), which include self-beliefs, social and problem-solving skills, and social, health, and financial resources. The coping process is an unfolding and dynamic cognitive and behavioral attempt to exert control in situations appraised as stressful. It involves periodic reappraisal as new information or challenges present themselves. Coping may involve acting upon the environment, or the individual's own behavior, beliefs, and cognitions in order to exert control over the situation. Often, during reappraisal, the reaction to the stressor can become a stressor in itself, which can consume more of the individual's resources. Thus, the reaction to the event itself can be perceived as a threat to one's sense of control and ability to cope (e.g., Bonanno & Kaltman, 1999).

Typically, individuals' ways of responding to stressors and demands have been categorized into emotion-focused coping, which entails methods to decrease emotional distress, or problem-focused coping, which entails strategies to deal directly with the stressor as a problem that needs to be solved (e.g., Folkman & Lazarus, 1991). Generally, coping research indicates that individuals who use problem-focused coping strategies fare better on a number of mental health outcomes when compared to individuals who use more emotion-focused coping strategies (e.g., Florian, Mikulincer, & Taubman, 1995). For example, Gil and Caspi (2006) found that after a terror attack on a bus, higher levels of emotion-focused coping (i.e., avoidance) predicted PTSD.

However, some research suggests that in the aftermath of a trauma, the effectiveness of problem- and emotion-focused coping varies, depending on the type of stressor (e.g., Sharkansky, King, King, Wolfe, Erickson, & Stokes, 2000; Suwak, Vogt, Savarese, King, & King, 2002). Some researchers have speculated that under unpredictable, uncontrollable, and chronically stressful conditions (e.g., the possibility of future terrorist attacks), emotion-focused coping and denial may be more useful and produce better outcomes than action oriented problem-focused coping (e.g., Lazarus & Folkman, 1984). In non-terror contexts, research has shown that attempts to find solutions for things that are outside one's control can increase distress (e.g., Forsythe & Compas, 1987). However, Silver et al. (2002) found that problem-solving coping strategies in the general population

were inversely associated with anxiety and distress six months after the attacks of 9/11, whereas emotion-focused coping predicted higher levels of distress. In college students indirectly affected by the events of 9/11, Laverant, Hofmann, and Litz (2004) also found emotion-focused coping strategies were predictive of anxiety and worry about the threat of terror at two and four months following the terrorist attacks. On the other hand, two studies of individuals who were at risk for SCUD attacks in Israel (Weisenberg, Schwarzwald, Waysman, Solomon, & Klingman, 1993) or transportation explosions (Gidron, Gal, & Zahavi, 1999) found that individuals who employed problem-focused coping had poorer outcomes. This held true for both adults (Gidron et al., 1999) and children (Weisenberg et al., 1993).

A solution to these disparate findings may be found in the goodness of fit hypothesis (see Masel, Terry, & Gribble, 1996; Park, Folkman, & Bostrom, 2001), which emphasizes the need for a fit between individual appraisal (e.g., uncontrollable nature of terror) and coping (e.g., self-soothing and emotion-focused coping as opposed to problem-focused coping) within the specific cultural context. Cairns and Wilson (1989) examined two forms of coping in individuals affected by terror in Northern Ireland: emotional distancing, which they used as a proxy for denial, and social support-seeking. They also examined individual's appraisals of violence in their communities. The authors found that appraisals of violence, not actual levels of violence, determined coping choice. Those living in areas of higher violence used more distancing overall, and individuals who appraised the violence as more severe, regardless of the actual violence in their neighborhood, used more social support-seeking and less distancing coping, providing support for the goodness of fit hypothesis.

Supporting the connection between appraisal and coping effectiveness, Zeidner (2006) found that both problem- and emotion-focused coping were related to positive outcomes in Israel during the Al-Aqsa Intifada, but primary appraisals of greater threat from terror and secondary appraisals of decreased personal control limited the effectiveness of emotion-focused coping. Gidron et al. (1999) emphasized that problem-focused coping can be useful in some terrorist-related situations (e.g., looking out for and identifying suspicious individuals), and may in turn provide individuals with a sense of mastery over their environment. They argued that it is not problem-focused coping per se, but the ratio of problem- to emotion-focused coping that may be associated with higher levels of anxiety. However, as Zeidner (2006) points out, the relative frequency of emotional- or problem-focused coping may be a direct effect of primary and secondary attribution processes and the overall sense of threat and helplessness.

The categorical distinction between emotion- and problem-focused coping falls short when applied to coping with impending threat. For example, "emotion-focused" coping in this context is too broadly defined. Expressing emotional reactions in response to the threat of terrorism and gaining social support may produce different outcomes than constantly "venting" about these fears in an alienating and unproductive fashion. Broadly-defined, emotion-focused coping with adjustment is ambiguous and difficult to interpret (see Stanton et al., 2000). Generally, the bipolar conceptualization of coping fails to take into account dimensional variation and that emotion- and problem-focused strategies are not mutually exclusive and orthogonal (see Skinner, Edge, Altman, & Sherwood, 2003). An additional problem with the extant research on coping with terror is the possibility of change over time. The bus commuters in the study by Gidron et al. (1999) were approached 4 to 5 days after a bus explosion, and the children in the study by Weisenberg et al. (1993) were surveyed three weeks after the launch of the SCUD missiles. In contrast, the survey of Silver et al. (2002) was conducted six months after the event. As coping is a

dynamic process, cross-sectional research fails to capture the unfolding trajectory and interplay of demands and coping over time.

At this juncture, it is unclear what the coping literature can tell us about how best to cope with terror. Clearly, cross-sectional research focusing on the bipolar, broadly-defined constructs of emotion- and problem-focused coping has produced equivocal findings. We know people do both in response to terrorism and either can be helpful in specific circumstances. Rather than focusing exclusively on coping behaviors, it may be most important to focus on the primary and secondary appraisal processes that ultimately determine the coping behaviors. On this level of analysis, work by Cairns and Wilson (1989) and Zeidner (2006) suggest that appraisal of personal threat and perceived control may be the main mediating factors that ultimately determine what coping responses will be most helpful to individuals.

Factors affecting primary coping appraisals and estimation of risk

In the months after the events of 9/11, about two-thirds of Americans reported fears of future terrorist acts (Silver et al., 2002). One year after 9/11, 42% of a representative sample of 2,368 individuals from the five boroughs of New York City reported continuing to report "high fear" of future terrorist attacks (Adams & Boscarino, 2005). Given that the likelihood of an individual being harmed by a future terrorist act is probabilistically extremely low, the levels of anxiety produced by the events of 9/11, as well as the Anthrax attacks that followed, suggest exaggerated estimates of future harm. There has been good progress in looking at how terror events shape individuals' ongoing attributions of safety and risk, which affects decision-making, coping, behavior, and ultimately functioning.

Several factors may combine to influence probability estimates of future harm and lingering changes in psychological impact. One is the scale of the event. In terms of reactions to 9/11, the magnitude of the attack on 9/11 was unprecedented. With about 3,000 people killed as a result of the terrorist attacks in New York City alone, the population estimate of loss of "friends, family or colleagues," on or after 9/11, was 10 million nationally, with 2.5 million suffering losses in New York City and 500,000 in the Washington DC area. These findings are based on data from a probable sample survey of the impact of terrorism on 11 September 2001 (see Schlenger et al., 2002 for details of the survey). In the New York and Washington metropolitan areas, these numbers indicate that approximately 14 and 10%, respectively, of the total populations of these areas experienced loss as a result of the events, based on the population estimates at the time of the events (Population Division, US Census Bureau, 2006). As expected, individuals who were survivors and/or lost a close family member, friend, or co-worker were the most impacted (Silver et al., 2002), however, 9/11 created a shared mourning and insecurity in America (e.g., Blanchard, Rowell, Kuhn, Rogers, & Wittrock, 2005; Knudsen et al., 2005).

Anticipating a threat can evoke as much anxiety as the event itself (Mandler, Matejcek, Matheson, & Anisman, 2005), a key factor to consider in determining the ongoing functional impact of coping with the threat of terrorism is how individuals perceive the potential threat and make attributions about the relevance of the event to themselves (see Lazarus & Folkman, 1984; Dalgleish, 2004). If individuals perceive the event as not personally relevant or unlikely to occur in their community, they are less likely to change behaviors and be functionally impacted. However, it is well established that logic and statistical probabilities are rarely used in risk assessment (see Fischhoff, Gonzales, Lerner, & Small, 2005; Mandel, 2005, for reviews). Instead, the likelihood of events is based on the

ease of accessibility of examples in memory (Tversky & Kahneman, 1973) and, as a result, the affective impact of future events tends to be overestimated. This overestimation seems to be related to the chronic accessibility of atypical, salient, and emotionally evocative events (see Morewedge, Gilbert, & Wilson, 2005, for a review), which leads individuals to overestimate statistically small, but affectively potent risks (see Reyna, 2004, for a review).

This is particularly salient in this case, as memories of prior terrorist acts are likely to have strong emotions associated with them, such as anger, fear, disgust, etc. Appraisal-tendency theory posits that specific emotions elicit specific cognitive appraisals that impact subsequent cognitions, physiology, and action (e.g., Lerner & Keltner, 2001; Small, Lerner, & Fischhoff, 2006). Each emotion is hypothesized to activate specific schemas that include information about causation and perceived controllability. Once these emotion-related associations are activated, subsequent, temporally- and/or affectively-related events are likely to be appraised through a similar lens, regardless of the functionality of the appraisal. For example, anxiety causes exaggerated estimates of personal risk and uncontrollability across situations, independent of the actual level of risk inherent in particular contexts.

On 20 September 2001, Lerner, Gonzalez, Small, and Fischhoff (2003) asked a random sample of 1,786 individuals to complete an anxiety and a desire for vengeance scale. About two months later, 973 of the original 1,786 individuals completed an experimental task and follow-up questionnaires. Participants were assigned to one of three emotion induction conditions: anger, sadness, or fear. The induction consisted of two parts. First, individuals were asked to describe what made them angry, sad, or afraid about the attacks of 9/11. Next, individuals saw a picture and heard accompanying audio material collected from CNN and the *New York Times* that evoked the target emotion. For example, in the anger condition, participants watched celebrations of the attacks by people in Arab countries. After the manipulation, individuals rated their perception of risk of another terrorist attack, the level of impact events will have on society, and the level of impact events will have on themselves and their actions in the future.

Evoked emotions led individuals to make appraisals and decisions based on these emotions (Lerner et al., 2003), supporting predictions by appraisal tendency theory. For example, those in the fear condition endorsed higher risk estimates (e.g., "I feel that future terrorist attacks can happen anytime anywhere and there is no way of predicting when or where") and advocated more precautionary courses of action that have a strong potential to impact day-to-day functioning (e.g., "you will screen your mail carefully for suspicious items"). In the anger condition, angry feelings resulted in beliefs that punitive public policy was warranted (e.g., "deport foreigners in the US who lack valid visas"). These findings suggest that emotional responses to a terrorist event have lasting implications on attitudes, decision-making, and coping.

Fischhoff et al. (2005) followed the Lerner et al. (2003) study group one year later and found, in part, that the original emotional primes impacted not only judgments of future risk, but also how people re-evaluated and recollected previous risk and impact assessments. In November 2001, Sadler, Lineberger, Correll, and Park (2005) found that anger in response to viewing 9/11 related footage, along with attributions of blame, predicted advocating aggressive military responses, although sadness was associated with opposite attributions and evoked opposite policy endorsements.

This research suggests that a person's immediate reaction to an act of terrorism cannot only significantly shape individuals' subsequent cognitions, behaviors, and functioning, but

may also impact individuals' ongoing adaptation, and influence policy-making and society as a whole. An initial reaction to an event can be parsed into the evoked emotion and the appraisal of the event (the perception of threat and the primary appraisal, which are the antecedents to coping; Lazarus & Folkman, 1984). Appraisal-tendency theory posits that the dynamic interplay of these two factors shapes individuals' responses over time and is likely to influence long-term functioning (see DeSteno, Petty, Rucker, Wegener, Braverman, 2004; Lerner & Keltner, 2001). Given evidence that individuals' acute emotional response to a terrorist act is strongly correlated with self-reported functioning (Silver et al., 2002), it is also possible that emotional appraisals of one's ability to cope, either initially or ongoing, will affect future self-schemas related to coping efficacy, world view, esteem, and mental health (see Ehlers, Mayou, & Bryant, 1998).

As this is an ongoing process, a number of factors may influence emotional arousal and subsequent appraisals and functioning. One is the tendency for individuals to habituate to stressors and return to homeostasis, or baseline arousal, over time. For example, research conducted in Israel during the Gulf War demonstrated that although individuals expressed significant fear after the first SCUD attacks, levels of fear diminished with time, despite continued attacks, as individuals habituated to the situation (Solomon, 1995). However, other factors may maintain or periodically evoke related emotions and maintain individuals' attributions over time. Tucker (2003) suggests that information from the government and media can exacerbate fears about subsequent terrorist attacks by providing constant fear-based reminders. Lerner et al. (2003) posited that media clips induce strong emotions in the public that may, in turn, influence appraisals and support for certain public policies. Research has demonstrated that the government and media's responses can serve to heighten anxiety (e.g., Ahern, Galea, Resnick, & Vlahov, 2004; Landau et al., 2004a; Tucker, 2003), and as a result, likely amplify individuals' estimates of future threat.

Appraisal-tendency theory provides a good theoretical frame for exploring how perhaps non-cognitively mediated or unregulated emotional reactions to extremely evocative events, such as terrorism, may shape the course of primary coping appraisals and subsequent coping reactions. So far, preliminary research in this area has been fruitful. What remains is to examine how appraisals of threat shape secondary appraisals and coping behaviors over time.

Processes that affect primary and secondary coping attributions

Three areas of inquiry address how ongoing risk appraisal processes influence functioning, impact attributions about self and the world, and shape coping behaviors - *Terror Management Theory, meaning making, and just world schemas*.

Terror Management Theory

Terror Management Theory (TMT; e.g., Landau et al., 2004b; Pyszczynski, Solomon, & Greenberg, 2003) can be used to examine how the dynamic interplay of emotional arousal and attribution affects individuals' perceived threat of a terrorist attack. TMT posits that reminders of mortality and perceived life threats affect individuals' perception, processing, and appraisal of events; humans strive to maintain worldviews that provide a sense of security and meaning to buffer against feelings of anxiety related to reminders of mortality and the limits of control over fate and environment (see Arndt, Greenberg, & Cook, 2002). Threats to these worldviews cause intense anxiety, and in turn, cause individuals to take steps to bolster their worldview. This may heighten nationalistic beliefs (e.g., Arndt et al.,

2002), promote aggression against those who violate the worldview (e.g., Hobfoll, Canetti-Nisim, & Johnson, 2006; McGregor et al., 1998), and increase commitment to close relationships (e.g., Mikulincer, Florian, Birnbaum, & Malishkevich, 2002). Individuals may limit knowledge and distort perceptions of people and things in their environment to reject or ignore information or people that threaten their worldview. Further, until the threat is reconciled, information related to these worldviews and associated cognitive processes remains chronically accessible, and, thus, more likely to influence behavior.

In the UK, after the invasion of Iraq, but before the July 2005 terrorist attacks in the London underground, increased perception of risk of future terrorism was associated with avoidance of certain parts of London, decreased use of the Underground, cancelled travel plans, and reports of feeling closer to significant others (Goodwin, Wilson, & Gaines, 2005). At a Midwest US university two weeks after 9/11, Yum and Schenck-Hamlin (2005) found that undergraduates responded to increased perceptions of threat by engaging in increased self-esteem building (prosocial acts), social relationship building (spending time with others), worldview enhancing cognitions (defining persons of Arab descent as "others"), and meaning making activities (discussed in more detail below). Other studies have documented reactions to 9/11 consistent with TMT including increased affiliative behavior (Mehl & Pennnebaker, 2003), and increases in social and cognitive processes associated with individuals struggling to make sense and meaning of the events in a four-month diary study that spanned 11 September 2001 (Cohn, Mehl, & Pennnebaker, 2004).

Just World Schemas and the Self

Consistent with TMT, and perhaps subsumed within it, is the concept of *just world schemas*. Lerner (1980) proposed that individuals develop and organize their sense of self around the idea that the world is just and predictable. Just world schemas are motivated beliefs that individuals' environments are safely predictable and that fate is just; in essence, fate is predictable and earned, and people get what they deserve (see also Hafer & Begue, 2005 for a review). In maintaining just world schemas, individuals attempt to find the positive personal implications in various actions and minimize the negative, so that they can see themselves as effective agents in the world with the ability to control their fates; however, this may lead to a tendency to judge others far more harshly and make attributions that others "deserve" their fate (see also Taylor & Brown, 1988). Kaiser, Vick, and Major (2004) found that the level of pre-9/11 endorsement of just world beliefs was associated with increased distress and increased endorsement of aggressive military action for revenge in college students two months after the attacks.

Justice motivated attributions are essential elements of adapting or accommodating to new events or stressors by helping to reduce feelings of uncertainty and maintain a sense of control over one's environment (see Van den Bos, 2001; Wilson, Centerbar, Kermer, & Gilbert, 2005). Although schemas about the threat of terrorism may be pre-existing and greatly impacted by previous experiences, individuals may also over-accommodate in response to a specific terrorist event, which influences perceptions of future threats. Terrorist acts may not only influence assessments about future risk from terrorist attacks, but over-accommodation to such an act and the associated attributions about causality may affect well-being and subsequent functioning. At least one study demonstrated that low self-confidence after the terrorist attacks of 9/11 predicted PTSD symptoms, even after controlling for anxiety and depression (Piotrkowski & Brannen, 2002). Individuals who experience traumatic events often have negative views of themselves (including self-blame), unrealistic attributions of their personal control in the situation, and an exaggerated sense of

danger in the world. These thoughts are associated with increases in attributions of likelihood of similar events and personal risk, which can feed into a cycle of increases in PTSD symptoms and increased sense of being out of control, leading to further maladaptive adjustment (e.g., Bryant & Guthrie, 2005; Frazier, 2003). Conversely, perception of personal control and mastery over one's environment is associated with lower distress and impairment. Thompson et al. (2006) surveyed over 500 adults in the year following 9/11, defining distress as a concern with personal safety, related anxiety and helplessness, and a fear of flying, and found that those with higher perceived control were more resilient in the face of ongoing threat. Furthermore, the low use of primary control strategies (i.e., taking action to feel more secure if flying or increasing the feeling of safety from these risks) and greater use of two secondary control strategies (understanding why the attacks occurred and focusing on personal low risk for future attacks) were also associated with lower levels of distress.

Meaning Making and Growth

Individuals generally strive for coherence and meaning in the face of ambiguity, challenge, dilemmas, conflict, inconsistency, and other threats to well being. When coping with chronic, ambiguous threats, how a person copes with the threat of future terrorist attacks is, in part, driven by constructed personal meanings about the attacks. These constructions are likely to vary in their valence, intensity, salience, and degree of self-relevance, and they probably influence functional outcomes. Meaning making in this context is closely related to TMT and just world theories, and may entail making sense of events by: 1) finding ways to accommodate the event; 2) finding predictability, justice, and spiritual meaning, finding benefits by looking for growth in character and stronger relationships, often as a result of engaging in self-esteem and social relationship building behaviors predicted by TMT (see Davis & McKearney, 2003), and 3) engaging in maladaptive counterfactual thinking, such as rumination or asking "what if" (see Davis, 2001 for a review). Individuals who experience potentially traumatic events may also experience personal growth as a result of effective coping. Part of this growth seems to be associated with how they revise their schemas in a way that ultimately gives personal meaning to the trauma and consolidates perceptions of growth (Tedeschi, 1999).

Davis and Macdonald (2004) found that perceived threat of future attacks after 9/11 in Canada was associated with greater distress, feeling closer to family, more pro-social acts (as predicted by TMT), and greater perceived growth. These positive life changes remained stable approximately one year later. Perceived growth in response to 9/11 was also found in a large Internet survey on positive character traits, which found an increase in endorsement of traits associated with belonging in the months after 9/11 (Peterson & Seligman, 2003). However, there is also evidence that benefit finding and perceived growth may be a result of greater event-related disruption, loss of resources, and post event symptomatology (Hobfoll et al., 2006; see also Tomich & Helgeson, 2004).

Individual Differences and Coping Attributions

In this section, we describe individual differences extrapolated from meta-analyses of risk factors for PTSD (Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2003) that are conceptually linked to attributions of safety and risk in a terror context.

Previous Mental Health Status and the Events of 9/11

Acts of terrorism and fear of future terrorism, acute and chronic stressors, interact with a number of diatheses. One of the most well researched diatheses is a pre-existing history of mental health difficulties (see Brewin et al., 2000; Ozer et al., 2003), which affects response to terror and natural disaster (see Norris, Friedman, Watson, Byrne, Diaz, & Kaniasty, 2002). Individuals with a pre-existing depressive mood in the context of war or SCUD attacks are at greater risk of clinical depression (Hobfoll, Lomranz, Eyal, Bridges, & Zemach, 1989; Lomranz, Hobfoll, Johnson, Eyal, & Zemach, 1994). For example, in survivors of the Oklahoma City bombing, pre-existing psychopathology was a strong predictor of post-bombing adjustment (North, Nixon, Shariat, Mallonee, McMillen, Spitznagel, & Smith, 1999; Shariat, Mallonee, Kruger, Farmer, & North, 1999). In one of the few longitudinal studies, pre-existing difficulties with externalizing or internalizing behaviors and self-esteem were associated with post-9/11 PTSD-related symptoms, anxiety, and conduct problems at six-month follow-up in children as far removed from direct exposure as Seattle, WA (Lengua, Long, Smith, & Malzoff, 2005).

Previous Exposure to Traumatic Events

Individuals with a previous trauma history tend to be more likely to be functionally impaired from exposure to subsequent traumas. They are more reactive to, and less likely to recover from subsequent life stressors than individuals with no trauma history (see Brewin et al., 2000; Ozer et al., 2003). Following an act of terror, some individuals may experience symptoms such as increased hypervigilance, which could be acute in nature, and may pass with time. A minority will have more chronic and severe reactions, and may develop PTSD and depression (e.g., Bleich, Gelkopf, & Solomon, 2003). In a clinical sample of refugees of conflicts in Bosnia, Somalia, Vietnam, Laos, and Cambodia, television exposure to the events of 9/11 was associated with significant disruption in the months after the attacks, particularly in those from the more recent conflicts in Bosnia and Somalia who were mostly Muslim (Kinzie, Boehnlein, Riley, & Sparr, 2002). In Israel during the Gulf War, Holocaust survivors reported stronger feelings of panic and fear, and higher stress and depression-related symptoms when compared to their same age counterparts (Solomon, 1995), perhaps due to parallels between their experiences in WWII and the Gulf War (e.g., the threat of gassing, an omnipotent tyrant, targeting unarmed civilians). Even those who are resilient and evidence signs of recovery may have significantly greater autonomic reactivity to trauma reminders several years after exposure to a terror attack (Tucker, Pfefferbaum, North, Kent, Burgin, Parker, Hossain, Jeon-Slaughter, & Trautman, 2007). In Israeli adolescents, prior terrorism exposure was associated with greater risk taking behaviors in the context of the ongoing threat of terror (Pat-Horenczyk, Peled, Miron, Brom, Villa, & Chemtob, 2007). On the other hand, Shalev and Freedman (2005) found that levels of exposure to terrorism in the general population in Israel did not affect the rate of symptoms following exposure to a subsequent traumatic event, raising the possibility that previous exposure to at least some events may inoculate individuals against problematic response to subsequent exposures.

In terms of managing the threat of possible future terrorism, personal risk assessments are likely to be influenced by trauma history. For example, heightened background arousal and stress reactivity from previous traumas may influence subsequent attributions and reactions to the uncertainty of future traumatic (e.g., terror) events. If individuals tend to be more

emotionally reactive to threat and have unique, emotionally-evocative memories of previous events, they are much more likely to judge that their risk is high and respond accordingly.

Level of Exposure

The frequency, intensity, and type of exposure to a given trauma is an important determinant of mental health response (Brewin et al., 2000). We have already noted that those more directly affected by 9/11 were the most impacted by the events (Adams & Boscarino, 2005; Silver et al., 2002). At the Pentagon, exposure to the 9/11 terrorist attack, including injury, exposure to dead bodies, and even acting as a lay counselor for families experiencing grief, was associated with higher levels of distress and probable event-related mental illness two years after the attack (Grteger, Waldrep, Lowasz, & Ursano, 2005). In a large study of Israeli adolescents, greater exposure to terrorism was associated with more PTSD symptoms and greater functional impairment (Pat-Horenczyk, Schiff, & Doppelt, 2006). Relative to those exposed to terror indirectly and symbolically, those who experience or survive terror directly are more at risk for lingering maladaptive response, including functional difficulties related to anxiety about the possibility of future exposure to terror.

Perceived Life Threat

Perceived life threat has been shown to mediate the effect of exposure to trauma on adjustment (see Ozer et al., 2003). In a prospective study of university students who were coincidentally surveyed prior to a terrorist explosion on a bus headed toward their university, perceived threat predicted greater PTSD symptoms (Gil & Caspi, 2006). Kutz and Dekel (2006) found that those who developed PTSD after a terrorist attack in an Israeli shopping mall indicated higher appraisals of threat of harm from Iraqi SCUD missiles than those with similar levels of exposure to the same attack who did not develop PTSD. Piotrkowski and Brannen (2002) found that exposure to the World Trade Center attacks in municipal workers in New York City was not associated with appraisal of future threat, but the researchers deliberately limited their sample to people who had limited exposure to the events. Future research on the psychosocial effects of the threat of future terrorism will need to account for, not only level of exposure to the terrorist incident, but perceptions of life threat as well.

Post Terror Demands and Stressors

Subsequent life events also seem to have a broad impact on functioning after exposure to a potentially traumatic event (see Brewin et al., 2000). Arguably, this is especially true if the subsequent event is another terrorist event. For example, McCaslin, Jacobs, Meyer, Johnson-Jimenez, Metzler, and Marmar (2005) found that post-terrorism negative life events had a mediating role in subsequent development of depression, PTSD, and anxiety symptoms in Red Cross disaster workers who responded to the events of 9/11. However, increased exposure was also associated with rating subsequent life events as more negative. Subsequent life events can add to the burden of stress for an individual. The experience of on-going stress is likely to interact with emotion-related attributional sets, as described by the appraisal-tendency theory, to affect ongoing personal risk appraisal and accessibility of associated memories. One possible mediator of whether individuals are likely to be impacted by subsequent events is the resource loss associated with the event.

Resources

The conservation of resources (COR) model is an appraisal-based model of coping with stressful situations. Perceived ability to access social and personal resources during and after stressful situations is thought to shape primary attributions, coping responses, and distress (Moos & Holahan, 2003). The COR model hypothesizes that the experience of stress during adversity is directly related to associated loss of resources, making resource loss or gain especially salient in coping with adversity. In COR, resources are very broadly defined and include individual characteristics (e.g., internal-locus of control, self-esteem, self-efficacy, and socioeconomic status), and social characteristics (e.g., availability of support, and diversity of support resources). Resource loss is particularly salient in events that have community impact, such as acts of terrorism. In their review of the literature on adaptation to disasters, Norris et al. (2002) concluded that the most severe long-term effects result from human-caused disasters in which one of the following resource losses are present: extreme and widespread damage to property, serious and ongoing financial problems for the community, and high prevalence of trauma in the form of injuries, threat to life, and loss of life. Severe resource losses increase the likelihood of taxed coping capacities and the risk of coping poorly with the threat of future terrorism.

Although there is a substantial literature on the effects of resource loss in survivors of natural disasters, there is a dearth of studies looking at resource loss and adjustment to terror. The terrorist attack on 9/11 was associated with community-level stress and resource loss in New York and Boston, for example, but also affected the whole population on some level by broadly impacting social support resource availability, and perhaps attributions about risk and controllability. In New York City, material loss was associated with psychological dysfunction (Galea et al., 2002). Adams and Boscarino (2005) found that social resources (measured as perceived support availability) were associated with better mental health, and personal resources (measured as self-esteem) were associated with better mental and physical health. Future research is needed to explore the effects of resource loss and gain on adjustment, and on the perception of future terror risk, not only in those directly affected by the terror events, but also in those indirectly affected.

Social Support

A key factor in COR models is the availability of social resources and the social context in which individuals accumulate and lose resources. Following mass violence events, communities play an important role in disseminating information, addressing basic needs, and mobilizing social support, all of which arguably mitigate long-term emotional distress and impairment (e.g., Kaniasty & Norris, 2004). Community support helps people recover by reducing isolation, normalizing suffering, and promoting healing disclosures. Community support in the context of coping with the threat of future terrorism arguably serves a similar purpose. A community that can mobilize and plan for the future may allay citizens' fears to some extent (i.e., coping by planning, active coping in preparing for future hypothetical terrorism). This serves to unite community members under the cause of safety and protection from future threats, and normalizes having some degree of vigilance about future threats. Providing a context for planning and support within a community also provides a forum for discussion about future terrorism, allowing for disclosure about these fears and enabling citizens to implement safety plans.

Research on how communities function following disasters and other catastrophes may shed light on the role of the community in helping people cope with the threat of terror.

Norris and Kaniasty's (1996) Social Support Deterioration Deterrence model posits that in the aftermath of a disaster, social support is readily mobilized but declines shortly thereafter. By extension, because the challenge of coping with the threat of terror comes well after the actual terror event, the likelihood that the community could provide a substantive role appears slim, even if the level of concern among citizens is very strong. On the other hand, according to Kaniasty and Norris (2004), the initial mobilization of support immediately following a traumatic event neutralizes the deterioration in support over time because people maintain the positive belief that social networks are still intact. Consequently, the feeling of being connected to others and to the community at large remains, protecting against adverse mental health consequences. Thus, for those directly impacted by terror events, a successful experience with community-level support in the immediate aftermath should provide positive expectancies about how the person would do should they be exposed again to a future terror event, which, in turn, should predict more effective coping with the possibility of future terror.

The relationship between social network and support, and long-term psychosocial adaptation to terrorism, is unclear. Florian, Mikulincer, and Hirschberger (2002) found that close relationships served to buffer anxiety from mortality reminders. Norris et al. (2002) reports that social support systems remaining intact and functioning well post-disaster may serve as a protective factor against long-term mental health consequences. Conversely, Silver et al. (2002) found that seeking social support positively predicted PTS symptoms, but this might be due to the fact that individuals with more exposure to terrorism-related trauma are more likely to seek social support. There is also evidence that there are gender differences in social support-seeking in general and in the context of terrorism (see Cairns & Wilson, 1989). More longitudinal research is needed to clarify the role of social resources and social support processes in long-term psychological adaptation to terrorism.

Resilience

Although 50% of the US population has a history of exposure to potentially traumatic events, only 5–10% meet the diagnostic criteria for PTSD (Ozer et al., 2003). In 998 adults from the lower half of Manhattan surveyed from October to November 2001, the prevalence of depression and PTSD was 9.7 and 7.5%, respectively, and 16.8 and 20.0% for those south of Canal Street (closest to the World Trade Center) based on projections that participants met diagnostic criteria at some point in the prior month (Galea et al., 2002). In a larger New York City population survey six months after 11 September 2001, 6% indicated symptom levels concordant with probable PTSD and 65% endorsed none or only one symptom (Bonanno, Galea, Bucciarelli, & Vlahov, 2006). As previously noted, Schlenger et al. (2002) reported that distress levels nationally remained within population norms on average. In Israel, a large population study conducted in the spring of 2002, two years after the beginning of the Palestinian Intifada, found that although the majority of those surveyed indicated a low sense of safety for themselves or their family and self-reported depressed mood, most also indicated a high sense of hope, optimism, and low pathology (9.4% met criteria for PTSD diagnosis; Bleich et al., 2003).

In terms of the functional impact of chronic terror, it would appear from existing studies that the large majority of individuals will maintain functioning in the face of the threat of future terrorist attacks, that is, resilience is the norm (Bonanno, 2004; Masten, 2001). It is reasonable to assume that only a small percentage of the population will be severely impaired as a result of isolated terror events. Indeed, there is evidence that maintaining a

routine despite the ongoing threat of terror is adaptive. The majority of Israeli adolescents in one study reported that despite the ongoing threat of terror, they maintained routine daily activities (e.g., continued riding public transportation) and that their parents encouraged them to do so (Pat-Horenczyk et al., 2006). In fact, perceived parental limiting of routines is a risk factor for PTSD symptoms and related functional impairment (Cohen & Eid, 2007; Pat-Horenczyk et al., 2006).

It is important to elucidate the normative processes that promote adaptation in the context of coping with the threat of future terror. Such research will provide clues about how best to promote resilience and to intervene when functioning is compromised. In a prospective study, Fredrickson, Tugade, Waugh, and Larkin (2003) surveyed participants in early 2001, and again after the 9/11 attacks. They found that individuals that were more resilient, defined as the capacity to "modulate effectively and monitor an ever-changing complex of desires and reality constraints" (Block & Kremen, 1996, p. 359), were more likely to find positive meaning with daily hassles and stressors. More resilient individuals were also likely to report more positive emotions and fewer negative emotions following the attacks in New York, and resilience was negatively correlated with symptoms of depression. Also, positive emotions mediated the relationship between resilience and the development of depressive symptoms as well as between resilience and growth in psychological resources. It is unclear whether the Fredrickson et al. (2003) study results are generalizable given the small sample size. Furthermore, since none of the participants knew anyone who was killed during the attacks, the results may not apply to people directly impacted by an actual terrorism event. Despite these limitations, this study suggests that positive emotion has a broad impact on individuals' risk appraisal-tendencies and meaning making.

Resilience may be a personality dimension impacted by other individual differences. For example, Bonanno, Rennicke, & Dekel (2005) followed individuals who were either in or near the World Trade Center towers during the attacks of 9/11 and found that those individuals highest in self-enhancement, the tendency to make overly positive attributions about themselves, their qualities, their situations, and their contributions to outcomes (see Taylor, Lerner, Sherman, Sage, & McDowell, 2003a, 2003b), were least functionally impacted 7–18 months after the event. Perceived personal resilience also served as a protective factor against PTSD, grief, and dissociation symptoms in a study of adolescents facing ongoing terrorism (Laor, Wolmer, Alon, Siev, Samuel, & Toren, 2006).

Demographic Characteristics

Static factors that do not or tend not to change as a result of terrorist acts, such as gender, age, IQ, education, SES, and minority status, are all linked to increased risk for maladaptive responses to trauma (Brewin et al., 2000), also specifically in survivors of terror and natural disasters (Norris et al., 2002). The review by Norris et al. (2002) of 160 studies of reactions to mass traumas indicated that female gender, younger age groups in general, but, in adults, middle-age particularly, and ethnic minority status were individual differences that predicted level of functioning across studies (i.e., natural disaster, terror attacks). Research of responses to 9/11 largely supports these findings (e.g., Adams & Boscarino, 2005; Galea et al., 2002; Pulcino, Galea, Ahern, Resnick, Foley, & Vlahov et al., 2003).

Of particular interest are demographic-based differences in risk appraisals of future terror following 9/11. One consistent finding has been that women have reported feeling less safe and more at risk of harm from a future attack across studies, even when controlling for level of self-reported emotion (Goodwin et al., 2005; Kaiser et al., 2004; Lerner et al., 2003;

Piotrkowski & Brannen, 2002). This is consistent with research in just world schemas and TMT, which has highlighted gender differences in the application and response to worldview threats (Arndt et al., 2002; Hafer & Begue, 2005; Kaiser et al., 2004; O'Connor, Morrison, McLeod, & Anderson, 1996). These gender findings have held true with Israeli samples in the context of terrorism as well. Bleich, Gekkopf, Melamed, & Solomon (2006) found that following 44 months of ongoing terrorism in Israel, women reported greater stress symptoms and PTSD, and less resilience compared to men. Women were also at greater risk of PTSD and depression in a study of Jewish and Arab-Israelis from five Israeli cities impacted by terrorism (Sommer, Maguen, Or-Chen, & Litz, in press). Kimhi and Shamai (2006) surveyed a large sample of Israeli adolescents and adults following terrorism related to Israel's withdrawal from Lebanon in the domains of cognitive appraisals, coping styles, psychological symptoms, and life satisfaction. For adolescents, gender differences were found in cognitive appraisals and psychological symptoms; gender differences were found in each of the four domains in adults.

In terms of the influence of age on attributions related to likelihood of terrorist attacks, in the Lerner et al. (2003) test of appraisal-tendency theory, no differences were found between adolescents and adults. Indeed, adolescents' sense of mortality was acutely potentiated by the events of 9/11; their rating of the risk of death in general due to other causes was greater than their rating made pre-9/11. However, Levine, Whalen, Henker, and Jamner (2005) found that adolescents appraised the events of 11 September 2001 to have less personal relevance for them than for their parents. Other studies indicate that for adolescents in other parts of the US not directly impacted by the attacks, 9/11-related distress quickly resolved (Ford, Udry, Gleiter & Chatala, 2003; Whalen, Henker, Kings, Jamner, & Levine, 2004). This is consistent with a study in the UK, completed during the time period between the 9/11 attacks in the US and the London Underground attacks of 7 July 2005, which found that increased age was positively associated with increased perceived probability of attack (Goodwin et al., 2005).

Summary and Implications for Future Research

In terms of the impact of the threat of terrorism, it would appear that the majority of individuals are resilient and cope well with the threat of future terrorist attacks. However, terror-related outcomes have typically been defined as the presence or absence of psychopathology, which, we have argued, has limited the knowledge base considerably. What we do not know is: How do citizens transcend concerns about their safety in the face of terror? The field needs theory-driven, dimensional, and multivariate research that addresses *how* people maintain functioning in the face of terror, and conversely, the variables that predict significant functional impairments.

Currently, we also do not know what embodies a normative outcome, and the ideal form of adaptation is uncertain. For example, is it sufficient that citizens get on with their lives and behave in a manner that is consistent with the actual threat of being harmed by a terrorist attack, that is, not behaving, thinking, or feeling differently? Is a degree of vigilance and preparation required in a potentially dangerous world? Psychological, social, and cultural adaptation to the threat of terrorism likely lies along a highly skewed distribution, with a small percentage of the population severely impaired. Severe functional impairment may manifest as diagnosable anxiety disorders and phobias (e.g., generalized anxiety disorder, PTSD, etc.). At the other end of the spectrum lie individuals who are coping exceptionally well; perhaps they maintain a small degree of vigilance, are well-informed,

prepare in a reasonable fashion, estimate accurately the probability of harm from future attacks, and manifest no curtailment in functioning.

We reviewed the factors that may influence how individuals cope with the threat of harm from terrorism and the functional impact that living with the threat of terrorism may have on individuals. We focused on several areas: possible coping responses to terrorism, factors that influence coping, including primary attributions of risk, secondary attributions of coping resources, and factors that shape both coping and functional behavior, including individual differences that influence responsiveness to perceived risk, and the coping responses that may result.

All of the coping concepts and processes reviewed are highly inter-related. Individual appraisal of risk appears to be influenced by perceived mortality, the need to preserve stable worldviews, or meaning making processes, all of which, in turn, are influenced by individual diatheses, making them particularly vulnerable to chronic stress (such as exposure to previous terrorist acts, previous mental health history, etc.) and buffered by resiliency factors (such as individual differences in positive affectivity). All these factors together shape coping responses, which, in turn, feedback and interact with ongoing risk appraisals as described by appraisal tendency theory, and self-attributions related to individual diatheses, coping ability, worldview, and meaning making.

The literature reviewed here, however, is very limited and inconclusive. Future research needs to focus on a more fine grained measurement of coping, "goodness of fit" of type of coping and event, time since event, potentially interacting individual difference factors, and the influence of normative processes that may shape responses and coping behaviors. This review suggests that individual appraisals of terrorism and coping strategies may change over time, supporting Moos and Billings (1982) suggestion that it is important to assess "appraisal-focused coping," that is, how people re-appraise a situation in order to define its meaning (a process that unfolds over time). This indicates an important need for longitudinal research to examine the course of managing the threat of terrorism. Additionally, future research will need to make a distinction between pathology in response to fears of terror and functional impact. What remains to be explored is the extent to which the average person's life has changed with respect to their perceived safety, anxiety, and the functional impact of lingering concerns about future terrorism (e.g., behavioral choices and plans).

References

- Adams, R. E., & Boscarino, J. A. (2005). Stress and well-being in the aftermath of the World Trade Center attack: The continuing effects of a community-wide disaster. *Journal of Community Psychology*, 33, 175-190.
- Ahern, J., Galen, S., Resnick, H., & Vlahov, D. (2004). Television watching and mental health in the general population of New York City after September 11. *Journal of Aggression, Maltreatment & Trauma*, 9, 109-124.
- Ardit, J., Greenberg, J., & Cook, A. (2002). Mortality salience and the spreading activation of worldview-relevant constructs: Exploring the cognitive architecture of terror management. *Journal of Experimental Psychology: General*, 131, 307-324.
- Blanchard, E. B., Rowell, D., Kuhn, E., Rogers, R., & Wittrock, D. (2005). Posttraumatic stress and depressive symptoms in a college population one year after the September 11 attacks: The effect of proximity. *Behaviour Research and Therapy*, 43, 143-150.
- Bleich, A., Gekhof, M., & Solomon, Z. (2003). Exposure to terrorism, stress-related mental health symptoms, and coping behaviors among a nationally representative sample in Israel. *Journal of the American Medical Association*, 290, 612-620.
- Bleich, A., Gekhof, M., Melamed, Y., & Solomon, Z. (2006). Mental health and resiliency following 44 months of terrorism: A survey of an Israeli national representative sample. *BMC Medicine*, 4, 21.
- Block, J., & Kremen, A. M. (1996). IQ and ego-resiliency: Conceptual and empirical connections and separateness. *Journal of Personality and Social Psychology*, 70, 349-361.

- Bonanno, G. A. (2004). Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist*, 59, 20-28.
- Bonanno, G. A., & Kaltman, S. (1999). Toward an integrative perspective on bereavement. *Psychological Bulletin*, 125, 760-776.
- Bonanno, G. A., Rennicks, C., & Debel, S. (2005). Self-enhancement among high-exposure survivors of the September 11th terrorist attack: Resilience or social maladjustment? *Journal of Personality and Social Psychology*, 88, 984-998.
- Bonanno, G. A., Galen, S., Bucciarelli, A., & Vlahov, D. (2006). Psychological resilience after disaster: New York City in the aftermath of the September 11th terrorist attack. *Psychological Science*, 17, 181-186.
- Boscarino, J. A., Adams, R. E., & Galen, S. (2006). Alcohol use in New York after the terrorist attacks: A study of the effects of psychological trauma on drinking behavior. *Addictive Behaviors*, 31, 606-621.
- Brewin, C. R., Andrews, B., & Valentine, J. D. (2000). Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *Journal of Consulting and Clinical Psychology*, 68, 748-766.
- Bryant, R. A., & Guthrie, R. M. (2005). Maladaptive appraisals as a risk factor for posttraumatic stress: A study of trainee firefighters. *Psychological Science*, 16, 749-752.
- Butler, A. S., Panzer, A. M., Goldfrank, L. R., & Institute of Medicine of the National Academies (2003). *Preparing for the psychological consequences of terrorism: A public health strategy*. Washington DC: National Academies Press.
- Cairns, E., & Wilson, R. (1989). Coping with political violence in Northern Ireland. *Social Science and Medicine*, 28, 621-624.
- Cohen, M., & Eid, J. (2007). The effect of constant threat of error on Israeli Jewish and Arab adolescents. *Anxiety, Stress, and Coping*, 20, 47-60.
- Collin, M. A., Mehl, M. R., & Pennebaker, J. W. (2004). Linguistic markers of psychological change surrounding September 11, 2001. *Psychological Science*, 15, 687-693.
- Dalgleish, T. (2004). Cognitive approaches to posttraumatic stress disorder: The evolution of multirepresentational theorizing. *Psychological Bulletin*, 130, 228-260.
- Davis, C. G. (2001). The tormented and the transformed: Understanding responses to loss and trauma. In R. A. Neimeyer (Ed.), *Meaning reconstruction and the experience of loss* (pp. 137-155). Washington, DC: APA.
- Davis, C. G., & McKeeney, J. M. (2003). How do people grow from their experience with trauma or loss? *Journal of Social & Clinical Psychology*, 22, 477-492.
- Davis, C. G., & Macdonald, S. L. (2004). Threat appraisals, distress and the development of positive life changes after September 11th in a Canadian sample. *Cognitive Behaviour Therapy*, 33, 68-78.
- DeSteno, D., Petty, R. E., Rueker, D. D., Wegener, D. T., & Braverman, J. (2004). Discrete emotions and persuasion: The role of emotion-induced expectancies. *Journal of Personality and Social Psychology*, 86, 43-56.
- Ehlers, A., Mayou, R. A., & Bryant, B. (1998). Psychological predictors of chronic posttraumatic stress disorder after motor vehicle accidents. *Journal of Abnormal Psychology*, 107, 508-519.
- Fischhoff, B., Gonzalez, R. M., Lerner, J. S., & Small, D. A. (2005). Evolving judgments of terror risks: Foresight, hindsight, and emotion. *Journal of Experimental Psychology: Applied*, 11, 124-139.
- Florin, V., Mikulincer, M., & Taubman, O. (1995). Does hardness contribute to mental health during a stressful real-life situation? The roles of appraisal and coping. *Journal of Personality and Social Psychology*, 68, 687-695.
- Florin, V., Mikulincer, M., & Hirschberger, G. (2002). The anxiety-buffering function of close relationships: Evidence that relationship commitment acts as a terror management mechanism. *Journal of Personality & Social Psychology*, 82, 527-542.
- Folkman, S., & Lazarus, R. S. (1991). Coping and emotion. In A. Monat & R. S. Lazarus (Eds.), *Stress and coping: An anthology* (third edition, pp. 207-227). New York: Columbia University Press.
- Ford, C. A., Udry, J. R., Gleiter, K., & Chatala, K. (2003). Reactions of young adults to September 11, 2001. *Archives of Pediatric Adolescent Medicine*, 157, 572-578.
- Forsythe, C. J., & Compas, B. E. (1987). Interaction of cognitive appraisals of stressful events and coping: Testing the goodness of fit hypothesis. *Cognitive Therapy and Research*, 11, 473-485.
- Frazier, P. A. (2003). Perceived control and distress following sexual assault: A longitudinal test of a new model. *Journal of Personality and Social Psychology*, 84, 1257-1269.
- Fredrickson, B. L., Tugade, M. M., Waugh, C. E., & Larkin, G. R. (2003). What good are positive emotions in crisis? A prospective study of resilience and emotions following the terrorist attacks on the United States on September 11th, 2001. *Journal of Personality and Social Psychology*, 84, 365-376.
- Galen, S., Ahern, J., Resnick, H., Kilpatrick, D., Bucavas, M., Gold, J., et al. (2002). Psychological sequelae of the September 11 terrorist attacks in New York City. *New England Journal of Medicine*, 346, 982-987.
- Gidron, Y., Gal, R., & Zahavi, S. (1999). Bus commuters' coping strategies and anxiety from terrorism: An example of the Israeli experience. *Journal of Transcultural Stress*, 12, 185-192.

- Gil, S., & Caspi, Y. (2006). Personality traits, coping style, and perceived threat as predictors of posttraumatic stress disorder after exposure to a terrorist attack: A prospective study. *Psychosomatic Medicine*, 68, 904-909.
- Goodwin, R., Wilsson, M., & Gaines, S. Jr. (2005). Terror threat perception and its consequences in contemporary Britain. *British Journal of Psychology*, 96, 389-406.
- Grigori, T. A., Waldrep, D. A., Lovasz, M. M., & Ursano, R. J. (2005). Follow-up of Pentagon employees two years after the terrorist attack of September 11, 2001. *Psychiatric Services*, 56, 1374-1378.
- Hafetz, C. L., & Bègue, L. (2005). Experimental research on just-world theory: problems, developments, and future challenges. *Psychological Bulletin*, 131, 128-167.
- Hobfoll, S. E., Lomranz, J., Eyal, N., Bridges, A., & Tzermach, M. (1989). Pulse of a nation: Depressive mood reactions of Israelis to the Israel-Lebanon War. *Journal of Personality and Social Psychology*, 56, 1002-1012.
- Hobfoll, S. E., Canetti-Nisim, D., & Johnson, R. J. (2006). Exposure to terrorism, stress-related mental health symptoms, and defensive coping among Jews and Arabs in Israel. *Journal of Consulting and Clinical Psychology*, 74, 207-218.
- Kaiser, C. R., Vitek, S. B., & Major, B. (2004). A prospective investigation of the relationship between just-world beliefs and the desire for revenge after September 11, 2001. *Psychological Science*, 15, 503-506.
- Kaniasty, K., & Norris, F. H. (2004). Social support in the aftermath of disasters, catastrophes, and acts of terrorism: Altruistic, overwhelmed, uncertain, antagonistic, and patriotic communities. In R. Ursano, A. Norwood, & C. Fullerton (Eds.), *Bioterrorism: Psychological and public health interventions* (pp. 200-229). Cambridge: Cambridge University Press.
- Kimhi, S., & Shamai, M. (2006). Are women at higher risk than men? Gender differences among teenagers and adults in their response to threat of war and terror. *Women Health*, 43, 1-19.
- Kinzis, J. D., Boehlman, J. K., Riley, C., & Sparr, L. (2002). The effects of September 11 on traumatized refugees: Reactivation of posttraumatic stress disorder. *Journal of Nervous and Mental Disease*, 190, 437-441.
- Knudsen, H. K., Roman, P. M., Johnson, J. A., & Ducharme, L. J. (2005). A changed America? The effects of September 11th on depressive symptoms and alcohol consumption. *Journal of Health and Social Behavior*, 46, 260-273.
- Kurz, J., & Dekel, R. (2006). Follow-up of victims of one terrorist attack in Israel: ASD, PTSD and the perceived threat of Iraqi missile attacks. *Personality and Individual Differences*, 40, 1579-1589.
- Landau, M. J., Solomon, S., Greenberg, J., Cohen, F., Pyszczynski, T., Arndt, J., Miller, C. H., O'Givvie, D. M., & Cook, A. (2004a). Deliver us from evil: The effects of mortality salience and reminders of 9/11 on support for President George W. Bush. *Personality and Social Psychology Bulletin*, 30, 1136-1150.
- Landau, M. J., Johns, M., Greenberg, J., Pyszczynski, T., Martens, A., Goldenberg, J. L., & Solomon, S. (2004b). A function of form: Terror management and structuring the social world. *Journal of Personality and Social Psychology*, 87, 190-210.
- Loor, N., Wolmer, L., Alon, M., Sier, J., Samuel, E., & Toren, P. (2006). Risk and protective factors mediating psychological symptoms and ideological commitment of adolescents facing continuous terrorism. *Journal of Nervous and Mental Disease*, 194, 279-286.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.
- Lengua, L. J., Long, A. C., Smith, K. I., & Meltzoff, A. N. (2005). Pre-attack symptomatology and temperament as predictors of children's responses to the September 11 terrorist attacks. *Journal of Child Psychology and Psychiatry*, 46, 631-645.
- Lerner, M. J. (1980). *The belief in a just world: A fundamental delusion*. New York: Plenum Press.
- Lerner, J. S., & Keltner, D. (2001). Fears, anger, and risk. *Journal of Personality and Social Psychology*, 81, 146-159.
- Lerner, J. S., Gonzalez, R. M., Small, D. A., & Fischhoff, B. (2003). Effects of fear and anger on perceived risks of terrorism: A national field experiment. *Psychological Science*, 14, 144-150.
- Levine, L. J., Whalen, C. K., Henker, B., & Jamner, L. D. (2005). Looking back on September 11, 2001: Appraised impact and memory for emotions in adolescents and adults. *Journal of Adolescent Research*, 20, 497-523.
- Livran, G. I., Hofmann, S. G., & Litz, B. T. (2004). Coping and anxiety in college students after the September 11th terrorist attacks. *Anxiety, Stress, and Coping*, 17, 127-139.
- Litz, B. T., Gray, M. J., Bryant, R., & Adler, A. B. (2002). Early intervention for trauma: Current status and future directions. *Clinical Psychology: Science and Practice*, 9, 112-134.
- Lomranz, J., Hobfoll, S. E., Johnson, R., Eyal, N., & Zermach, M. (1994). A nation's response to attack: Israelis' depressive reactions to the Gulf War. *Journal of Traumatic Stress*, 7, 59-73.
- Mandel, D. R. (2005). Are risk assessments of a terrorist attack coherent? *Journal of Experimental Psychology: Applied*, 11, 277-288.
- Mandler, J., Munticek, A., Matheson, K., & Anisman, H. (2005). Coping with employment uncertainty: A comparison of employed and unemployed workers. *Journal of Occupational Health Psychology*, 10, 280-289.
- Masel, C. N., Terry, D. J., & Gribble, M. (1996). The effects of coping on adjustment: Re-examining the goodness of fit model of coping effectiveness. *Anxiety, Stress and Coping: An International Journal*, 9, 279-300.
- Master, A. S. (2001). Ordinary magic: Resilience processes in development. *American Psychologist*, 56, 227-238.
- McCaslin, S. E., Jacobs, G. A., Meyer, D. L., Johnson-Jimenez, E., Metzler, T. J., & Marmar, C. R. (2005). How does negative life change following disaster response impact distress among Red Cross responders? *Professional Psychology: Research and Practice*, 36, 246-253.
- McGregor, H. A., Lieberman, J. D., Greenberg, J., Solomon, S., Arndt, J., Simon, L., & Pyszczynski, T. (1998). Terror management and aggression: Evidence that mortality salience motivates aggression against worldview-threatening others. *Journal of Personality and Social Psychology*, 74, 590-605.
- Melli, M. R., & Pennebaker, J. W. (2003). The social dynamics of a cultural upheaval: Social interactions surrounding September 11, 2001. *Psychological Science*, 14, 579-585.
- Mikulincer, M., Florian, V., Birnbaum, G., & Maltsbelevich, S. (2002). The death-anxiety buffering function of close relationships: Exploring the effects of separation reminders on death-thought accessibility. *Personality and Social Psychology Bulletin*, 28, 287-299.
- Moos, R. H., & Billings, A. G. (1982). Conceptualizing and measuring coping resources and coping processes. In L. Goldberger, & S. Breznitz (Eds.), *Handbook of stress: Theoretical and clinical aspects* (pp. 212-230). New York: Free Press.
- Moos, R. H., & Holahan, C. J. (2003). Dispositional and contextual perspectives on coping: Toward an integrative framework. *Journal of Clinical Psychology*, 59, 1387-1403.
- Morewedge, C. K., Gilbert, D. T., & Wilson, T. D. (2005). The least likely of times: How remembering the past biases forecasts of the future. *Psychological Science*, 16, 626-630.
- Norris, F. H., & Kaniasty, K. (1996). Received and perceived social support in times of stress: A test of the social support deterioration model. *Journal of Personality and Social Psychology*, 71, 498-511.
- Norris, F., Friedman, M. J., Watson, P. J., Byrne, C. M., Diaz, E., & Kaniasty, K. (2002). 60,000 disaster victims speak: Part I. An empirical review of the empirical literature, 1981-2001. *Psychiatry: Interpersonal and Biological Processes*, 65, 207-239.
- North, C. S., & Pfefferbaum, B. (2002). Research on the mental health effects of terrorism. *Journal of the American Medical Association*, 288, 633-636.
- North, C. S., Nixon, S. J., Shariat, S., Mallonee, S., McMillen, J. C., Spitznagel, E. L., & Smith, E. M. (1999). Psychiatric disorders among survivors of the Oklahoma City bombing. *Journal of the American Medical Association*, 282, 755-762.
- O'Connor, W. E., Morrison, T. G., McLeod, L. D., & Anderson, D. (1996). A meta-analytic review of the relationship between gender and belief in a just world. *Journal of Social Behavior & Personality*, 11, 141-148.
- Ozer, E. J., Best, S. R., Lipsey, T. L., & Weiss, D. S. (2003). Predictors of posttraumatic stress disorder and symptoms in adults: A meta-analysis. *Psychological Bulletin*, 129, 52-73.
- Parf, C. L., Folkman, S., & Bostrom, A. (2001). Appraisals of controllability and coping in caregivers and HIV+ men: Testing the goodness-of-fit hypothesis. *Journal of Consulting and Clinical Psychology*, 69, 481-488.
- Pat-Horenczyk, R., Schiff, M., & Doppelt, O. (2006). Maintaining routine despite ongoing exposure to terrorism: A healthy strategy for adolescents? *Journal of Adolescent Health*, 39, 199-205.
- Pat-Horenczyk, R., Peled, O., Miron, T., Brom, D., Villa, Y., & Chemtob, C. M. (2007). Risk-taking behaviors among Israeli adolescents exposed to recurrent terrorism: Provoking danger under continuous threat? *American Journal of Orthopsychiatry*, 77, 66-72.
- Petersen, C., & Seligman, M. E. P. (2003). Character strengths before and after September 11. *Psychological Science*, 14, 381-384.
- Pfefferbaum, B., Sconzo, G. M., Flynn, B. W., Kearns, L. J., Doughty, D. E., Gurvitch, R. H., et al. (2003). Case finding and mental health services for children in the aftermath of the Oklahoma City bombing. *Journal of Behavioral Health Services and Research*, 30, 215-227.
- Piotrowski, C. S., & Brammen, S. J. (2002). Exposure, threat appraisal, and lost confidence as predictors of PTSD symptoms following September 11, 2001. *American Journal of Orthopsychiatry*, 72, 476-485.
- Population Division, US Census Bureau (2006, January 19). Table 1: Annual estimates of the population of metropolitan and micropolitan statistical areas: April 1, 2000 to July 1, 2004 (CBSA-EST2004-01). Available at: <http://www.census.gov/population/www/estimates/metrotable01.xls> (retrieved 22 August 2006).
- Pulcinio, T., Galea, S., Alhem, J., Resnick, H., Foley, M., & Vlahov, D. (2003). Posttraumatic stress in women after the September 11 terrorist attacks in New York City. *Journal of Women's Health*, 12, 809-820.
- Pyszczynski, T., Solomon, S., & Greenberg, J. (2003). In the wake of 9/11: The psychology of terror. *American Journal of Orthopsychiatry*, 73, 1019.
- Reyna, V. F. (2004). How people make decisions that involve risk: A dual-processes approach. *Current Directions in Psychological Sciences*, 13, 60-66.

- Sadler, M. S., Lineberger, M., Correll, J., & Park, B. (2005). Emotions, attributions, and policy endorsement in response to the September 11th terrorist attacks. *Basic and Applied Social Psychology*, 27, 249-258.
- Schlinger, W. E. (2004). Psychological impact of the September 11, 2001 terrorist attacks: Summary of empirical findings in adults. *Journal of Aggression, Maltreatment & Trauma*, 9, 97-108.
- Schlinger, W. E., Caddell, J. M., Eberl, L., Jordan, B. K., Rourke, K. M., Wilson, D., et al. (2002). Psychological reactions to terrorist attacks: Findings from the National Study of Americans' reactions to September 11. *Journal of the American Medical Association*, 288, 581-588.
- Schuster, M. A., Stein, B. D., Jaycox, L. H., Collins, R. L., Marshall, G. N., Elliott, M. N., et al. (2001). A national survey of stress reactions after the September 11, 2001 terrorist attacks. *New England Journal of Medicine*, 345, 1507-1512.
- Shalev, A. Y., & Freedman, S. (2005). PTSD Following terrorist attacks: A prospective evaluation. *American Journal of Psychiatry*, 162, 1188-1191.
- Shariat, S., Mallones, S., Kruger, E., Farmer, K., & North, C. (1999). A prospective study of long-term health outcomes among Oklahoma City bombing survivors. *Journal of the Oklahoma State Medical Association*, 92, 178-186.
- Shackansky, E. J., King, D. W., King, L. A., Wolfe, J., Erickson, D. J., & Stokes, L. R. (2000). Coping with Gulf War combat stress: Mediating and moderating effects. *Journal of Abnormal Psychology*, 109, 188-197.
- Shiver, R. C., Holman, E. A., McIntosh, D. N., Poulin, M., & Gil-Rivas, V. (2002). Nationwide longitudinal study of psychological responses to September 11. *Journal of the American Medical Association*, 288, 1235-1244.
- Skinner, E. A., Edge, K., Altman, J., & Sherwood, H. (2003). Searching for the structure of coping: a review and critique of category systems for classifying ways of coping. *Psychological Bulletin*, 129, 216-269.
- Small, D. A., Lerner, J. S., & Fischhoff, B. (2006). Emotion priming and attributions for terrorism: Americans' reactions in a national field experiment. *Political Psychology*, 27, 289-298.
- Solomon, Z. (1995). *Coping with war induced stress: The Gulf War and the Israeli response*. New York: Plenum Press.
- Somer, E., Maguen, S., Or-Chen, K., & Litz, B. T. (in press). Managing terror: Differences between Jews and Arabs in Israel. *International Journal of Psychology*.
- Stanton, A. L., Danoff-Burg, S., Cameron, C. L., Bishop, M., Collins, C. A., Kirk, S. B., et al. (2000). Emotionally expressive coping predicts psychological and physical adjustment to breast cancer. *Journal of Consulting & Clinical Psychology*, 68, 875-882.
- Suvak, M. K., Vogt, D. S., Savarese, V. W., King, L. A., & King, D. W. (2002). Relationship of war-zone coping strategies to long-term general life adjustment among Vietnam veterans: Combat exposure as a moderator variable. *Personality and Social Psychology Bulletin*, 28, 974-985.
- Taylor, S. E., & Brown, J. D. (1988). Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin*, 103, 193-210.
- Taylor, S. E., Lerner, J. S., Sherman, D. K., Sage, R. M., & McDowell, N. K. (2003a). Portrait of the self-enhancer: Well adjusted and well liked or maladjusted and friendless? *Journal of Personality and Social Psychology*, 84, 165-176.
- Taylor, S. E., Lerner, J. S., Sherman, D. K., Sage, R. M., & McDowell, N. K. (2003b). Are self-enhancing cognitions associated with healthy or unhealthy biological profiles? *Journal of Personality and Social Psychology*, 85, 605-615.
- Tedeschi, R. G. (1999). Violence transformed: Posttraumatic growth in survivors and their societies. *Aggression and Violent Behavior*, 4, 319-341.
- Thompson, S. C., Schlehofer, M. M., Bovin, M. J., Dougan, B. T., Montes, D., & Trifkin, S. (2006). Disposition, control strategies, and distress in the general public after the 2001 terrorist attack. *Anxiety, Stress, and Coping*, 19, 143-159.
- Tomich, P. L., & Helgeson, V. S. (2004). Is finding something good in the bad always good? Benefit finding among women with breast cancer. *Health Psychology*, 23, 16-23.
- Tucker, J. B. (2003). Strategies for countering terrorism: Lessons from the Israeli experience. *Journal of Homeland Security* [online]. Available at: <http://www.homelanddefense.org/journal/articles/tucker-israel.html>
- Tucker, P. M., Pfefferbaum, B., North, C. S., Kent, A., Burgin, C. E., Parker, D. E., Hossain, A., Icon-Slaughter, H., & Trautman, R. P. (2007). Physiological reactivity despite emotional resilience several years after direct exposure to terrorism. *American Journal of Psychiatry*, 164, 189-191.
- Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology*, 5, 207-232.
- van den Bos, K. (2001). Uncertainty management: The influence of uncertainty salience on reactions to perceived procedural fairness. *Journal of Personality and Social Psychology*, 80, 931-941.
- Weisenberg, M., Schwarzwald, J., Waysman, M., Solomon, Z., & Kingman, A. (1993). Coping of school-age children in the sealed room during scud missile bombardment and postwar stress reactions. *Journal of Consulting and Clinical Psychology*, 61, 462-467.
- Whalen, C. K., Henker, B., King, P., Janner, L. D., & Levine, L. J. (2004). Adolescents react to the events of September 11, 2001: Focused versus ambient impact. *Journal of Abnormal Child Psychology*, 32, 1-11.
- Wilson, T. D., Centerbar, D. B., Kermer, D. A., & Gilbert, D. T. (2005). The pleasures of uncertainty: prolonging positive moods in ways people do not anticipate. *Journal of Personality and Social Psychology*, 88, 5-21.
- Yum, Y., & Schenck-Hamlin, W. (2005). Reactions to 9/11 as a function of terror management and perspective taking. *Journal of Social Psychology*, 145, 265-286.
- Zeidner, M. (2006). Individual differences in psychological reactions to terror attack. *Personality and Individual Differences*, 40, 771-781.